PLEASE AMEND THE CLAIMS AS INDICATED BELOW:

1-24. (Canceled)

(New) 25. A plasma chemical reactor comprising:

a reaction chamber;

gas supply means for supplying the reaction chamber with plasma forming gas;

means for the removal of the aim product from the reaction chamber; and

at least a pair of electrodes in the reaction chamber,

each electrode being located in an open container filled with metal, and

disposed in such a way that voltage applied between them strikes an arc discharge in the space between the electrodes; and

wherein the gas supply means feeds the plasma forming gas to the reaction chamber between the electrodes to form a vortex flow of the gas in the space between the electrodes.

(New) 26. The plasma chemical reactor according to claim 25, wherein the arc discharge in the space between the electrodes is such that it induces melting of the metal within the open containers.

(New) 27. The plasma chemical reactor according to claim 25, wherein the electrodes in the reaction chamber are arranged horizontally.

(New) 28. The plasma chemical reactor according toclaim 25, wherein the reaction chamber includes additional inlets for individual reagents and reaction mixture.

(New) 29. The plasma chemical reactor according to claim 25, wherein the electrode containers and the gas supply means are formed of a heat-resistant dielectric material.

(New) 30. The plasma chemical reactor according to claim 24 further including a chute communicating with each electrode container, the chutes being constructed and arranged for filling the associated container with metal.

(New) 31. The plasma chemical reactor according to claim 25, further including voltage supply means for applying voltage to metal within each electrode container, the voltage supply means each being comprised of a channel within which an electrical conductor is received, the conductor having a first end which is brought in contact with the metal filling the container and which melts together with the metal, and the second end which is connected to an external voltage source, and which remains solid during operation.

(New) 32. The plasma chemical reactor according to claim 25, wherein the gas supply means is comprised of:

a vertical wall at the bottom of the chamber;

a discharge channel;

a plurality of internal gas channels,

the gas channels having respective outlet ends communicating with the discharge channel and respective inlet ends communicating with at least one source of plasma forming gas;

the gas channels being located at an angle to the wall of the discharge channel such that plasma forming gas forms the vortex in the discharge channel.

(New) 33. The plasma chemical reactor according to claim 32, wherein the discharge channel is comprised of a cylindrical hole through the wall of the gas supply means.

(New) 34. The plasma chemical reactor according to claim 32, wherein the discharge channel is comprised of a tubular member located in the vertical wall of the gas supply means, the tubular member being bent in such a way that its ends are directed towards the electrode surface.

(New) 35. The plasma chemical reactor according to claim 32, wherein the discharge channel includes at least with one vortex chamber.

(New) 36. The plasma chemical reactor according to claim 35, wherein:

the vortex chamber is comprised of a cylindrical groove coaxial with, and of larger diameter than the diameter of the discharge channel; and

the gas channels are oriented at an angle to the side walls of the vortex chamber such that the vortex flow of the gas is produced.